

THURSDAY, DECEMBER 30, 1886

BABINGTON'S "BIRDS OF SUFFOLK"

Catalogue of the Birds of Suffolk; with an Introduction and Remarks on their Distribution. By Churchill Babington, D.D., &c. Reprinted from the *Proceedings of the Suffolk Institute of Archæology and Natural History*. 8vo, pp. 281. Map and 7 Plates. (London: Van Voorst, 1884-86.)

NUMEROUS as have lately been contributions to local British ornithology, the treatment of the subject is very far from being exhausted, and Dr. Babington's book is extremely welcome as supplying a new catalogue of the birds of a county having so favourable a situation as Suffolk. For though wanting the extended sea-board of one neighbour, Norfolk, which meets the uninterrupted roll of the polar waves, and possessing an almost even coast-line, very unlike the irregular contour of its other neighbour, Essex, Suffolk yet contains the most easterly point of England in Lowestoft Ness, as it is still fondly called, though a "ness" is there as hard to recognise in these days as is the "bay" of its historic Solebay, a few miles further south. Suffolk also is not without its "broads"—at Fritton, Oulton, Benacre, and Easton—insignificant as they may be in comparison with those of the northern half of the ancient East Anglian kingdom. It also shares with Norfolk the great Breydon Water, and with Essex the wide mouth of the Stour, while it has for its own the estuaries of the Blythe, the Alde, the Debden, and the Orwell, by no means despicable, even if they are not equal in size to those of the Colne, the Blackwater, and the Crouch, that drain so much of Essex. Suffolk again has a natural feature, the like of which is not possessed by either of its neighbours:—

"On Orfordness lies many a stone,
But Dungeness has ten for one,"

says the old adage, and it is not until the south-eastern corner of Kent is reached that a similar "beach" is presented, and that one only to be surpassed by the Chesil Bank of Dorset. Highly cultivated, too, as now is almost every acre in Suffolk that will repay cultivation, there are still some wide tracts along its eastern border, and again towards its north-western extremity, which, if indeed they have ever been under the plough, have long since lapsed into an approach to their original condition, and are overgrown with heather and gorse, or form "brecks," kept, by the teeth of countless sheep and rabbits, in the state of the poet's "smooth-shaven green." The western limits of the county not only bound, but slope into, the great Fen district, that spreads for miles and miles in an almost level plain towards the Wash. The chief part of Suffolk has long been inclosed, presenting, in the absence of any but the most inconsiderable elevations, a very uniform appearance; and, were it not for its numerous woods—not many of which are really ancient—and plantations, would afford harbour to few but the commonest of birds. An indefinite district, the soil of which is of the stiffest clay, is colloquially named "High Suffolk"; but where it begins or ends, no one knows; and, for some mys-

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terious reason, nobody will own to living in it. "High Suffolk" always begins in the next parish, or the next parish but one! A great contrast to these heavy lands is presented by the "breck" district already mentioned, where the chalk-formation comes nearly to the surface, and is only overlain by a few inches of the lightest sand—so light, indeed, that some places may be found as bare of vegetation as is a real desert—every particle of fertilising matter having been blown away by the wind after a spell of dry weather; and it will be remembered that in East Anglia the rainfall is less than in any other part of England. This district still retains, in at least one of its birds, in some of its insects, and in a few of its plants, indications of having been once—and that perhaps not so very long ago—a littoral, an arm of the sea having doubtless reached its low hills, and in after times retreating, having left these survivors who still hold their ground. But here we may say that we cannot for a moment subscribe to the opinion to which Dr. Babington gives currency (p. 123), though not saying whether he himself shares it, that the marine connexion was by "a broad estuary running from the South Suffolk coast between Bury St. Edmund's and Stowmarket through Thetford." So far as we are aware, there is no evidence in favour of such a violent supposition, and much against it. On the other hand, a very slight depression of the surface would once more bring the sea from the Wash up to Brandon, if not to Thetford.

We make no attempt to trace the deeper effects of geological formations and changes; but all these superficial characters, here so briefly sketched, combined with the geographical situation of the county, will serve to show why Suffolk should present a field of great interest to the ornithologist; its varied features offering suitable accommodation for many kinds of birds of diverse habits, and its eastward position a sanctuary where the wings of many a weary wanderer from afar may be folded at rest. There is the more need to urge the importance of these favourable circumstances, because they cannot be said to be too prominently laid before his readers by Dr. Babington, who perhaps through modesty, or perhaps through prudence (in which latter case he is certainly to be commended), abstains from setting forth the advantageous conditions of existence that the county of his adoption thus affords, albeit he devotes a few pages (258-268), which might well have been more, to the subject.

In computing the birds of a circumscribed area, it is always a difficult task to decide whether the adventitious strangers whom the accidents of travel may have driven upon its coast should be enumerated among its real inhabitants, for there is really much to be said on both sides of the question. At first sight it seems most absurd that, granting even there is no reasonable probability of its importation, the stray example of an exotic species, whose home may perhaps be in the further wastes of Northern Asia or the wilds of Arctic America, should be enrolled as a "British bird," because it has had the ill-luck to find its way hither and be killed—*secundum usum Anglicanum*—within the confines of the United Kingdom; but almost immemorial practice may be pleaded for this view of the case, and we are not minded to place on record a distinct decision against the claims

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of a local faunist on so delicate a question. However, the local faunist should recognise the fact that a long list is not necessarily "a strong list"—to use Dr. Babington's expression—and if space allowed us to go into details we should be inclined to strike off not a few species from his register. It is true that this would not materially alter his position, for a corresponding number would on the same ground have to be struck off the register of other counties. In reality, no one has ever doubted that the Suffolk roll is one of the highest to be found in England. Perhaps it would stand only second to that of Norfolk on the English record, for though both, so far as published lists go, are inferior to that of Yorkshire, we are persuaded that this last has been unduly swollen. We have a strong suspicion that a Kentish list would run any of them very hard; but we here speak without facts, for ornithologists have long been scarce in Kent, and no attempt at a Kentish list has been made for many a year. The comparison instituted by Dr. Babington between the ornithological wealth of Suffolk and certain other counties is in some measure fallacious,—the last list of Sussex birds, for example, dates from 1855 (not 1865 as he inadvertently states), while practically it was compiled in 1849, since which time a good many things have happened. Comparison with inland counties is of course misleading, and probably the well-known published catalogues for Cornwall, Somerset, Northumberland, and Durham, and for the Humber district, are alone those with which catalogues for Suffolk and Norfolk can be rightly compared; while the county last named, from the abundance of ornithological observers it has produced, is manifestly favoured in the race. One other thing may perhaps be mentioned in this connection, and that not so much for Dr. Babington as for authors of future "Avifaunas"; the ornithological richness of a district depends far more on the number of its real inhabitants than on the number of species which have occurred as stray visitors within its limits and only *bonâ fide* travellers. As regards large areas this is a truth so obvious that our remark may seem to be a platitude, but as regards small areas the consideration is too often overlooked.

Among all the English works on local ornithology with which we are acquainted, Dr. Babington's holds a peculiar place. Its contents are distinctly matters of fact, or of what passes for fact; in other words, it is a summary of records. No one would pretend to say that any book of this kind is, or could be, exhaustive; but the author has done his best to make his work so, and the infinite pains he has taken to be precise are present on every page—for every page bristles with references that have obviously cost him immense labour to collect, and his patient industry in culling them deserves the highest praise. On the other hand, this very precision may not unfrequently mislead the unwary. Unless the reader have a competent knowledge, elsewhere obtained, he may be apt to presume that the fact of such or such a species having been recorded as occurring or breeding at such or such a place and at such or such a time is an indication that it has not occurred or bred there at any other time. For the sake of those who are beginners, or ill-instructed in ornithology, and they ought to form a majority of those who use this book, it would have been better had the author uttered a warning against this kind of misconception, which in

many cases is certain to follow from this concise method of citing previously recorded observations. Experts, of course, will not be taken in by it, but we think it may deceive others. Experts, however, unless they be accustomed to the way in which local floras are compiled, have some right to complain of the application of botanical methods to a fauna—for it is plain that the "Catalogue of the Birds of Suffolk" is planned on essentially the same principle as would have been a catalogue of the plants of the same county, and not according to any zoological precedent.

A few words are Dr. Babington's due on another matter. To most zoologists his name will be new, and yet he entered the field of biological literature nearly five-and-forty years ago! His ornithological appendix to Potter's "History and Antiquities of Charnwood Forest," published in 1842, was a respectable, not to say ambitious, performance for an undergraduate; and, while showing rudiments of the same scrupulosity as is seen in the present work, is equally removed from loquacity, though containing some information that the British ornithologist would not willingly let die. Both in conception and in execution it naturally has been surpassed by later publications, nor can it be regarded as the original precursor of the numerous local "Avifaunas" of Britain. The primacy in this respect¹ belongs, we believe, to one the author of which has lately died, and to his memory we take this occasion of offering a passing tribute. The "Ornithological Rambles in Sussex," to which was added a catalogue of the birds of that county, appeared in 1849, the work of Mr. Arthur Edward Knox, who died on September 23, 1886, having nearly completed his seventy-eighth year. Mention of this observant naturalist, agreeable author, and accomplished gentleman is all the more needed, since his death obtained scant, if any, notice in the newspapers of the day, though column after column in their broad sheets chronicled the career of a successful horse-jockey who expired not long after. Mr. Knox, it is true, never assumed the character of a man of science any more than that of a man of letters, yet his literary style was of the best, while few professed naturalists more thoroughly practised scientific methods of observation, and none could more fully appreciate scientific worth. His three works—that already named, his "Game-Birds and Wild Fowl," and his "Autumns on the Spey"—all of the kind that is usually called "popular," have some characteristics that at once distinguish them from so many others to which that epithet is commonly applied. They are always accurate, seldom trivial, and never vulgar.

To return, however, to Dr. Babington's little volume. Its value, notwithstanding some shortcomings to which we have referred, is great, and the recorded facts, with which, as already stated, it is crammed, are such as no "British" ornithologist can afford to neglect. As a final mark of attention, let us notice that Dr. Babington's scholarly instinct has inspired him with enough courage to be the first writer who has corrected an unhappy mistake made by Linnæus, and restored (pp. 200-203) the old

¹ Of course there are several other local lists of older date, from that of Markwick downwards, including "The Norfolk and Suffolk Birds" of Sheppard and Whitear; but these were published in journals (mostly in the *Linnean Transactions*), and we are here speaking of separate works the scope of which is ornithology alone.

spelling *Podicipes*, for the ungrammatical, senseless, and misleading *Podiceps*, thereby removing a reproach which every literary man could successfully cast at a zoologist. *Exemplum sequendum!*

INTERMITTENT DOWNWARD FILTRATION
Ten Years' Experience (now Fourteen Years) in Works of
Intermittent Downward Filtration. By T. Bailey-Denton. Second Edition. (London: E. and F. N. Spon, 1885.)

THE treatment of sewage by intermittent downward filtration on specially prepared areas of land is now generally recognised as the most efficient method for the purification of the sewage of towns. Mr. Bailey-Denton is one of the ablest exponents of this system, and one who has had large experience in its practical application. He is also well known as being the joint author, with Col. Jones, of a well-devised scheme for treating the sewage of the metropolis on Canvey Island at the mouth of the Thames—a scheme, however, which has not been received with any sort of approval by the Metropolitan Board of Works. The Royal Commission on Metropolitan Sewage Discharge considered very fully the merits and demerits of the system, and expressed their opinion—“(1) That the process has great scientific merit, and offers valuable practical advantages for the disposal of sewage in situations where broad irrigation is impracticable, and where land suitable for filtration can be obtained. (2) That, however, it appears desirable, when the area of land is considerably reduced, that the sewage should be previously treated by some efficient process for removing the sludge. (3) That an arrangement of this kind would be applicable to the metropolis. . . .” Broad irrigation was defined by the Royal Commission to mean “the distribution of sewage over a large surface of ordinary agricultural ground, having in view a maximum growth of vegetation (consistently with due purification) for the amount of sewage supplied,” whereas filtration means “the concentration of sewage, at short intervals, on an area of specially chosen porous ground, as small as will absorb and cleanse it; not excluding vegetation, but making the produce of secondary importance.” On a suitable soil—a sandy loam with a small proportion of gritty gravel to quicken percolation is the best—specially prepared by surface levelling and deep under-drainage, one acre is capable of effectually purifying the sewage—without any preliminary treatment—of 1000 people, provided that the sewage is free from any large proportion of trade or manufacturing refuse, and that storm and surface waters are kept out of the sewers. The obligation to treat storm waters, which come down in the sewers in times of heavy rain, is one of the greatest obstacles in the path of any system of sewage purification, and will continue to be until all towns are supplied with a dual system of drains and sewers. One inch of rain, thrown off 100 acres, equals 2,262,200 gallons; “and if,” says Mr. Bailey-Denton, “one-tenth of this quantity suddenly reaches the outfall—say, in half an hour—no mode of treatment yet devised can deal with such a quantity without injury or defect.” As a rule, at the present time, despite prospective penalties for river pollution, the mixed sewage and storm water is allowed to pass into the rivers

without any sort of treatment. Mr. Bailey-Denton recommends that the storm overflow be connected with osier beds. “The beds are formed in horizontal areas which serve to check the rapidity of flow of suddenly discharged rainfall. This check causes the deposit of the floating solid matters in the furrows, while the flood-water rises and overflows the ridges and the osiers growing on them. These beds are not under-drained in any way; their simple purpose being to clarify those excess-waters which, without the check afforded by them, would be impetuously discharged, together with everything floating in them, into the natural streams of the watershed.” Mr. Bailey-Denton does not think it necessary or even desirable, in most cases, to precipitate the sludge—the minute suspended particles, organic and inorganic, of sewage—by chemical processes or depositing tanks, before the sewage is applied to the filtration beds. He does not believe that the sludge, unless mixed with solid trade refuse, under proper treatment is capable of clogging the pores of the land or of injuring vegetation. He recommends the filtration beds to be laid out in ridges and furrows—the sewage only flowing into the latter, and not being allowed to flood the ridges on which plants and vegetables are growing. The plants cannot then be injured by the deposit of the solid ingredients of the sewage on their stalks and leaves. “As soon as the deposit of sludge on the sides of the furrows is sufficient to prevent infiltration in any great degree, the sewage is withheld from the areas so affected. The sludge is then allowed to dry (partially) in the furrows, and when in a fit condition it is lifted and dug into the ridges,—as can be seen practised at Gennevilliers (Paris). The slimy matter which had appeared so considerable, and which puddled the bottom of the furrows, when in a wet state, shrinks to a skin of very insignificant thickness when dry, and is readily broken up and mixed with the soil.” Still Mr. Bailey-Denton admits that the extraction of the sludge has one great advantage, viz. that “the same land will filter double the quantity of clarified sewage liquid that it would cleanse sewage of which the finer particles have not been removed;” a very important point to towns where the area of land at disposal for sewage purposes is strictly limited.

The intermittency of the application of the sewage to the filter beds is a *sine qua non*. Each bed should have 18 hours' rest out of the 24, to allow air to follow the sewage as it percolates through the pores of the land, thereby renewing the oxidising properties of the soil—properties largely dependent, no doubt, on the life and growth of certain Bacterial organisms resident in the superficial layers of the soil, which have been shown by Warington and other observers to be the principal agents in the nitrification and purification of the nitrogenous organic matters of sewage. The assimilative power of growing plants is doubtless also a great aid in the purification of sewage, and the plan of ridges and furrows adopted by Mr. Bailey-Denton, in enabling him to raise large crops on filtration areas, has taken away from the system the reproach that it was utterly unremunerative. There can, however, be no doubt that it is in combination with surface or broad irrigation that intermittent filtration is likely to have its most useful application. In a valuable chapter on sewage farming, Mr. Bailey-Denton points